

AMENDMENTS TO THE CLAIMS

This listing replaces all prior versions and listings of claims in the application.

Listing of Claims

1. (Currently Amended) A method of providing a correction for a slave instrument, the slave instrument measuring properties of an object by exposing the object to electromagnetic radiation in at least two spectral ranges and obtaining one or more object responses thereto, the responses being based on detecting at least one of attenuation, reflection and scattering of the electromagnetic radiation in or from the object by use of one or more detectors, the responses obtained in a form where they express properties either directly or via a transformation, said method of correction comprising:

obtaining, for a plurality of stable objects, a set of responses_s comprising one or more pairs of related responses ($Q_{\text{low}}^{\text{S}}$ and $Q_{\text{high}}^{\text{S}}$)_s representing measurements in the at least two spectral ranges performed with the slave instrument and a set of responses, comprising one or more pairs of related responses ($Q_{\text{low}}^{\text{m}}$ and $Q_{\text{high}}^{\text{m}}$)_s representing measurements in the at least two spectral ranges performed with a master instrument;

wherein a pair of related responses ($Q_{\text{low}}^{\text{m}}$ and $Q_{\text{high}}^{\text{m}}$) of the master instrument corresponds to each pair of related responses ($Q_{\text{low}}^{\text{S}}$ and $Q_{\text{high}}^{\text{S}}$) of the slave instrument,

wherein each element in the corresponding pair of responses ($Q_{\text{low}}^{\text{m}}$ and $Q_{\text{high}}^{\text{m}}$) of the master instrument corresponds to an element in each pair of responses ($Q_{\text{low}}^{\text{S}}$ and $Q_{\text{high}}^{\text{S}}$) of the slave instrument,

determining, based on the sets of responses, a correcting function, the correcting function being a functional relationship between a ratio of related responses of the master instrument and a sum of a plurality of terms, each term being a product of a correcting coefficient (B_i) and powers of related responses ($Q_{\text{low}}^{\text{S}}$ and $Q_{\text{high}}^{\text{S}}$) of the slave instrument, wherein each response is raised to a power being a positive or negative real number, or zero, thereby determining a first set of correcting coefficients ($B_0; B_1; B_2 \dots$); [[and]]

storing the first set of correcting coefficients ($B_0; B_1; B_2 \dots$) in a memory means included in or adapted for communication with a data processing unit included in or adapted for communication with the slave instrument wherein the first set of correcting coefficients are used to provide a correction for the slave instrument;

initially measuring the plurality of stable objects on the master instrument to obtain the set of responses (Q_{low}^m and Q_{high}^m) representing measurements performed with the master instrument; and

initially storing the set of response (Q_{low}^m and Q_{high}^m) initially measured as a set of constant values in the memory, the memory being accessible from the slave instrument when measuring the corresponding stable objects on a slave instrument.

2. (Previously Presented) The method according to claim 1, wherein the electromagnetic radiation comprises X-rays.

3. (Cancelled)

4. (Previously Presented) The method according to claim 1, wherein the determination of the correcting function is based on a regression method.

5. (Previously Presented) The method according to claim 4, wherein the regression method is selected from the group consisting of principal component regression, multiple linear regression, partial least squares regression, and artificial neural networks.

6. (Previously Presented) The method according to claim 1, wherein the correcting function comprises a plurality of terms of the following form: $Q_{low}^{n1} * Q_{high}^{m1}$, wherein $n1$ and $m1$ are selected from the group consisting of real numbers and integers, and $n1$ is positive.

7. (Previously Presented) The method according to claim 6, wherein the correcting function comprises at least three of the following terms: Q_{low} , Q_{high} , Q_{low}^2 , Q_{high}^2 and Q_{low}/Q_{high} .

8. (Previously Presented) The method according to claim 6, wherein the correcting function comprises at least three of the following terms: $Q_{low} * Q_{high}$; $Q_{low}^2 * Q_{high}$; $Q_{low} * Q_{high}^2$; Q_{low}^2/Q_{high} ; Q_{low}/Q_{high}^2 ; Q_{low}^2/Q_{high}^2 ; and Q_{low}^2/Q_{high}^2 .

9. (Previously Presented) The method according to claim 1, wherein the correcting function is of the form:

$$\frac{Q_{low}^m}{Q_{high}^m} = B_1 Q_{low}^s + B_2 Q_{high}^s + B_3 Q_{low}^{s^2} + B_4 Q_{high}^{s^2} + B_5 Q_{low}^s Q_{high}^s + B_6 Q_{low}^{s^2} Q_{high}^s + B_7 Q_{low}^s Q_{high}^{s^2} \\ + B_8 \frac{Q_{low}^s}{Q_{high}^s} + B_9 \frac{Q_{low}^{s^2}}{Q_{high}^s} + B_{10} \frac{Q_{low}^s}{Q_{high}^{s^2}} + B_{11} \left[\frac{Q_{low}^s}{Q_{high}^s} \right]^2 + B_0$$

wherein the Bs are constants.

10. (Previously Presented) The method according to claim 1, further comprising:
determining, based on the sets of responses, a further correcting function, being a functional relationship between responses of the slave instrument (Q_{low}^s or Q_{high}^s) and related responses (Q_{low}^m or Q_{high}^m) of the master instrument, thereby determining a second set of correcting coefficients, α and β .

11. (Previously Presented) The method according to claim 10, wherein the further correcting function is a functional relationship between a high energy response of the slave instrument (Q_{high}^s) and the related high energy response (Q_{high}^m) of the master instrument.

12. (Previously Presented) The method according to claim 11, wherein the further correcting function is determined by use of univariate linear regression.

13. (Previously Presented) The method according to claim 12, wherein the further correcting function is of the form $Q_{\text{high}}^m = \alpha \cdot Q_{\text{high}}^s + \beta$.

14. (Previously Presented) The method according to claim 1, wherein the set of responses for the master instrument and the set of responses for the slave instrument each comprise one pair of related responses for each stable object comprised in the plurality of stable objects.

15. (Previously Presented) The method according to claim 1, wherein the related responses are obtained based on measurements on objects being conveyed.

16. (Previously Presented) The method according to claim 1, wherein each of the responses (Q) is an intensity (I).

17. (Previously Presented) The method according to claim 1, wherein each of the responses (Q) is an intensity (I) corrected with respect to dark current of the detectors.

18. (Previously Presented) The method according to claim 1 wherein each of the responses is a transmittance (T) being a ratio between an intensity resulting from measuring an object and a reference intensity.

19. (Previously Presented) The method according to claim 1, wherein each of responses is an absorbance, A, being defined as the negative logarithm to a transmittance, T, ($A = -\log(T)$).

20. (Previously Presented) The method according to claim 19, wherein the logarithm is one of a logarithm base 10 and a natural logarithm.

21. (Previously Presented) The method according to claim 1, wherein the responses for both the master and the slave instruments are absorbances, A_{low} and A_{high} , being determined by calculating

$$A_{\text{low}} = -\log_{10} \left[\frac{I_{\text{sample}}(\text{low}) - I_{\text{dark}}(\text{low})}{I_{\text{air}}(\text{low}) - I_{\text{dark}}(\text{low})} \right] \text{ and}$$
$$A_{\text{high}} = -\log_{10} \left[\frac{I_{\text{sample}}(\text{high}) - I_{\text{dark}}(\text{high})}{I_{\text{air}}(\text{high}) - I_{\text{dark}}(\text{high})} \right]$$

wherein I_{sample} is the intensity of the radiation detected when the object is irradiated, I_{dark} is the intensity of the radiation detected when the object is not irradiated, and I_{air} is the intensity of the radiation detected when no object is present, the intensities obtained in a measuring region in respective of the master instrument and the slave instrument by:

exposing the object in the measuring region to low and high X-ray energies and detecting with detectors the intensities $I_{\text{sample}}(\text{low})$ and $I_{\text{sample}}(\text{high})$, respectively;

detecting the intensities $I_{\text{dark}}(\text{low})$ and $I_{\text{dark}}(\text{high})$ from said detectors when no radiation reaches them; and

exposing said detectors to the low and high X-ray energies when no object is present in the measuring region and detecting $I_{\text{air}}(\text{low})$ and $I_{\text{air}}(\text{high})$, respectively.

22. (Previously Presented) The method according to claim 1, wherein each of the responses is a reflectance (R) expressing the reflectance from the surface of a respective of the objects.

23. (Previously Presented) The method according to claim 22, wherein the reflectance (R) is linearized, using the Kubelka-Munk transform ($K/S=(1-R)/2R$).

24. (Currently Amended) A method of correcting responses representing measurements for an object performed with a slave instrument, said method comprising:

determining, based on measurements with the slave instrument, a pair of related responses (Q_{low}^S and Q_{high}^S);

determining a ratio $[Q_{low}/Q_{high}]^{corr}$ using a correcting function, the correcting function being a functional relationship between a ratio of a pair of related responses (Q_{low}^m and Q_{high}^m) of a master instrument and a sum of a plurality of terms, each term of the plurality of terms being a product of a correcting coefficient (B_i) and powers of related responses (Q_{low}^S and Q_{high}^S) of the slave instrument, wherein each response is raised to a power being a positive or negative real number, or zero;

providing Q_{high}^{corr} , where Q_{high}^{corr} is substantially equal to Q_{high}^S , or Q_{high}^{corr} is determined using a further correcting function correlating Q_{high}^{corr} with Q_{high}^S ; [[and]]

calculating Q_{low}^{corr} as equal to $Q_{high}^{corr} * [Q_{low}/Q_{high}]^{corr}$, and thereby providing a set of corrected responses;

initially measuring a plurality of stable objects on the master instrument to obtain the pair of related responses to (Q_{low}^m and Q_{high}^m) representing measurements performed with the master instrument; and

initially storing the pair of related response (Q_{low}^m and Q_{high}^m) initially measured as a set of constant values in a memory, the memory being accessible from the slave instrument when measuring the corresponding stable objects on a slave instrument.

25.(Previously Presented) The method according to claim 24, wherein the further correcting function is of the form: $Q_{high}^{corr} = \alpha \cdot Q_{high}^S + \beta$.

26. (Previously Presented) The method according to claim 24, wherein the correcting function comprises terms of the following form: $Q_{low}^{n1} * Q_{high}^{m1}$, wherein $n1$ and $m1$ are one of real numbers and integers, and wherein $n1$ is positive.

27. (Previously Presented) The method according to claim 24, wherein the correcting function comprises at least three of the following terms: Q_{low} , Q_{high} , Q_{low}^2 , Q_{high}^2 and Q_{low}/Q_{high} .

28. (Previously Presented) The method according to claim 24, wherein the correcting function comprising at least three of the following terms: $Q_{low} \cdot Q_{high}$; $Q_{low}^2 \cdot Q_{high}$; $Q_{low} \cdot Q_{high}^2$; Q_{low}^2/Q_{high} ; Q_{low}/Q_{high}^2 ; Q_{low}^2/Q_{high}^2 ; and Q_{low}^2/Q_{high}^2 .

29. (Previously Presented) The method according to claim 24, wherein the correcting function is of the form:

$$\left[\frac{Q_{low}}{Q_{high}} \right]^{corr} = B_1 Q_{low}^s + B_2 Q_{high}^s + B_3 Q_{low}^{s^2} + B_4 Q_{high}^{s^2} + B_5 Q_{low}^s Q_{high}^s + B_6 Q_{low}^{s^2} Q_{high}^s + B_7 Q_{low}^s Q_{high}^{s^2} + B_8 \frac{Q_{low}^s}{Q_{high}^s} + B_9 \frac{Q_{low}^{s^2}}{Q_{high}^s} + B_{10} \frac{Q_{low}^s}{Q_{high}^{s^2}} + B_{11} \left[\frac{Q_{low}^s}{Q_{high}^s} \right]^2 + B_0$$

wherein the Bs are constants.

30. (Previously Presented) The method according to claim 24, wherein each of the responses (Q) is an intensity (I).

31. (Previously Presented) The method according to claim 24, wherein each of the responses (Q) is an intensity (I) corrected with respect to dark current of the detectors.

32. (Previously Presented) The method according to claim 24, wherein each of the responses is a transmittance (T) being a ratio between intensity resulting from measuring an object and a reference intensity.

33. (Previously Presented) The method according to claim 24, wherein each of responses is an absorbance, A, defined as the negative logarithm to a transmittance, T, ($A = -\log(T)$).

34. (Previously Presented) The method according to claim 33, wherein the logarithm is one of a logarithm base 10, and a natural logarithm.

35. (Previously Presented) The method according to claim 24, wherein the responses are absorbances being determined by calculating

$$A_{\text{low}} = -\log_{10} \left[\frac{I_{\text{sample}}(\text{low}) - I_{\text{dark}}(\text{low})}{I_{\text{air}}(\text{low}) - I_{\text{dark}}(\text{low})} \right] \text{ and}$$
$$A_{\text{high}} = -\log_{10} \left[\frac{I_{\text{sample}}(\text{high}) - I_{\text{dark}}(\text{high})}{I_{\text{air}}(\text{high}) - I_{\text{dark}}(\text{high})} \right],$$

wherein I_{sample} is the intensity of the radiation detected when the object is irradiated, I_{dark} is the intensity of the radiation detected when the object is not irradiated, and I_{air} is the intensity of the radiation detected when no object is present, the intensities obtained in a measuring region of the slave instrument by:

exposing an object in the measuring region to low and high X-ray energies and detecting with detectors the intensities $I_{\text{sample}}(\text{low})$ and $I_{\text{sample}}(\text{high})$, respectively;

detecting with the detectors the intensities $I_{\text{dark}}(\text{low})$ and $I_{\text{dark}}(\text{high})$ from said detectors when no radiation reaches them; and

exposing said detectors to the low and high X-ray energies when no object is present in the measuring region and detecting $I_{\text{air}}(\text{low})$ and $I_{\text{air}}(\text{high})$, respectively.

36. (Previously Presented) The method according to claim 24, wherein each of the responses is a reflectance (R) expressing the reflectance from the surface of a respective of the objects.

37. (Previously Presented) The method according to claim 36, wherein the reflectance (R) is linearized using the Kubelka-Munk transform ($K/S=(1-R)/2R$).

38. (Previously Presented) A method of determining a physical quantity for an object by a slave instrument, the method comprising:

determining for the object corrected high and low energy responses ($Q_{\text{high}}^{\text{corr}}$ and $Q_{\text{low}}^{\text{corr}}$) using the method according to claim 24; and

determining the physical quantity by applying a calibrated functional relationship between $Q_{\text{high}}^{\text{corr}}$ and $Q_{\text{low}}^{\text{corr}}$ and a physical quantity on said corrected responses.

39. (Previously Presented) A method of determining a physical quantity for an object by a slave instrument, the method comprising:

determining for the object corrected high and low energy responses ($Q_{\text{high}}^{\text{corr}}$ and $Q_{\text{low}}^{\text{corr}}$) using the method according to claim 24; and

determining the physical quantity by applying a calibrated functional relationship between $Q_{\text{high}}^{\text{corr}}$ and $Q_{\text{low}}^{\text{corr}}$ and a physical quantity on said corrected responses,

wherein the calibrated functional relationship is a functional relationship between a physical quantity and a sum of a plurality of terms, each term being a product of a calibration coefficient (B_i) and powers of related responses (Q_{low}^S and Q_{high}^S), wherein each response is raised to a power being a positive or negative real number, or zero.

40. (Previously Presented) The method according to claim 39, wherein the calibrated functional relationship comprises terms of the form: $Q_{\text{low}}^{n1} * Q_{\text{high}}^{m1}$, wherein $n1$ and $m1$ are at least one of real numbers and integers, and wherein $n1$ is positive.

41. (Previously Presented) The method according to claim 40, wherein the calibrated functional relationship comprises terms of the form: Q_{low} , Q_{high} , Q_{low}^2 , Q_{high}^2 and Q_{low}/Q_{high} .

42. (Previously Presented) The method according to claim 40, wherein the calibrated functional relationship comprises terms of the form: $Q_{low} * Q_{high}$; $Q_{low}^2 * Q_{high}$; $Q_{low} * Q_{high}^2$; Q_{low}^2/Q_{high} ; Q_{low}/Q_{high}^2 ; Q_{low}^2/Q_{high}^2 ; and Q_{low}^2/Q_{high}^2 .

43. (Previously Presented) The method according to claim 40, wherein the calibrated functional relationship is of the form:

$$F(Q) = B_1 Q_{low}^s + B_2 Q_{high}^s + B_3 Q_{low}^{s^2} + B_4 Q_{high}^{s^2} + B_5 Q_{low}^s Q_{high}^s + B_6 Q_{low}^{s^2} Q_{high}^s + B_7 Q_{low}^s Q_{high}^{s^2} \\ + B_8 \frac{Q_{low}^s}{Q_{high}^s} + B_9 \frac{Q_{low}^{s^2}}{Q_{high}^s} + B_{10} \frac{Q_{low}^s}{Q_{high}^{s^2}} + B_{11} \left[\frac{Q_{low}^s}{Q_{high}^s} \right]^2 + B_0$$

wherein the Bs are constants.

44. (Previously Presented) The method according to claim 38, wherein the calibration model is obtained by exposing the master instrument to a plurality of well-defined objects.

45. (Previously Presented) The method according to claim 44, wherein the well-defined objects are defined such that physical properties of the objects have been established by a chemical process.

46. (Previously Presented) The method according to claim 45, wherein the chemical process is a reference method for the determination of the physical properties.

47. (Previously Presented) The method according to claim 38, wherein each of the responses (Q) is one of:

an intensity (I);

a transmittance (T) derived as a ratio between intensity resulting from measuring an object and a reference intensity;

an absorbance defined as the negative logarithm to a transmittance ($A = -\log(T)$); and

a reflectance (R) expressing the reflectance from the surface of an object, the reflectance (R) being linearized using the Kubelka-Munk transform ($K/S = (1-R)/2R$).

48. (Previously Presented) The method according to claim 47, wherein, the responses are absorbances, the absorbances being determined by calculating

$$A_{\text{low}} = -\log_{10} \left[\frac{I_{\text{sample}}(\text{low}) - I_{\text{dark}}(\text{low})}{I_{\text{air}}(\text{low}) - I_{\text{dark}}(\text{low})} \right] \text{ and}$$
$$A_{\text{high}} = -\log_{10} \left[\frac{I_{\text{sample}}(\text{high}) - I_{\text{dark}}(\text{high})}{I_{\text{air}}(\text{high}) - I_{\text{dark}}(\text{high})} \right],$$

wherein I_{sample} is the intensity of the radiation detected when the object is irradiated, I_{dark} is the intensity of the radiation detected when the object is not irradiated, and I_{air} is the intensity of the radiation detected when no object is present, the intensities obtained in a measuring region of the slave instrument by:

exposing an object in the measuring region to low and high X-ray energies and detecting with detectors the intensities $I_{\text{sample}}(\text{low})$ and $I_{\text{sample}}(\text{high})$, respectively;

detecting with the detectors the intensities $I_{\text{dark}}(\text{low})$ and $I_{\text{dark}}(\text{high})$ from said detectors when no radiation reaches them; and

exposing said detectors to the low and high X-ray energies when no object is present in the measuring region and detecting $I_{\text{air}}(\text{low})$ and $I_{\text{air}}(\text{high})$, respectively.

49. (Previously Presented) A method of using a slave instrument for determining physical quantities of an object by use of dual X-ray radiation, the method comprising:

scanning substantially all or all of the object using X-ray beams having at least two energy levels, the at least two energy levels including a low energy level and a high energy level, the high energy level being higher relatively to the low energy level;

detecting the X-ray beams having passed through the object for a plurality of areas of the object;

determining, for each area of the object, the object's response (Q_{low}) at the low energy level and the object's response (Q_{high}) at the high energy level;

correcting the responses so determined using the correcting method according to claim 24; and

determining the physical quantity by applying a calibrated functional relationship between $Q_{\text{high}}^{\text{corr}}$ and $Q_{\text{low}}^{\text{corr}}$ and a physical quantity on said corrected responses.

50. (Previously Presented) The method according to claim 49, wherein the physical quantity is fat content.

51. (Previously Presented) The method according to claim 49, wherein the object is at least one of food and feed.

52. (Currently Amended) A data processing system for providing a correction for a slave instrument, said system using sets of responses based on detecting at least one of attenuation, reflection and scattering of electromagnetic radiation in or from an object exposed to said electromagnetic radiation in at least two spectral ranges, the set of responses comprising one or more pairs of related responses ($Q_{\text{low}}^{\text{S}}$ and $Q_{\text{high}}^{\text{S}}$) representing measurements performed with the slave instrument and a set of responses comprising one or more pairs of related responses ($Q_{\text{low}}^{\text{m}}$ and $Q_{\text{high}}^{\text{m}}$) representing measurements having initially

been performed with a master instrument, said responses being obtained for a plurality of stable objects, wherein each pair of related responses of the master instrument corresponds to a respective pair of related responses of the slave instrument, wherein each element in the corresponding pair of responses of the master instrument corresponds to a respective element in each pair of responses of the slave instrument, said data processing system comprising:

an accessing unit configured to access a memory, wherein the responses (Q_{low}^m and Q_{high}^m) of the master instrument and/or the responses (Q_{low}^s and Q_{high}^s) of the slave instrument are stored;

a processor configured to determine, based on the sets of responses, a correcting function, the correcting function being a functional relationship between a ratio of related responses of the master instrument and a sum of a plurality of terms, each term being a product of a correcting coefficient (B_i) and powers of related responses (Q_{low}^s and Q_{high}^s) of the slave instrument wherein each response is raised to a power being a positive or negative real number, or zero, thereby determining a first set of correcting coefficients ($B_0; B_1; B_2 \dots$);
[[and]]

a storage unit configured to store the first set of correction coefficients ($B_0; B_1; B_2 \dots$); and

a memory holding the pair of related response (Q_{low}^m and Q_{high}^m), representing the measurements having been initially performed with the master instrument, as a set of constant values, the memory being accessible from the slave instrument when measuring the corresponding stable objects on the slave instrument.

53. (Previously Presented) The data processing system according to claim 52, wherein the electromagnetic radiation comprises X-rays.

54. (Previously Presented) The data processing system according to claim 52, further comprising:

a processor configured to determine a further correcting function, the further correcting function being a functional relationship between a high energy response of the slave instrument (Q_{high}^s) and related high energy response (Q_{high}^m) of the master instrument, thereby determining a second set of correcting coefficients, α and β .

55. (Previously Presented) The data processing system according to claim 52, wherein each of the responses (Q) is one of:

an intensity (I);

a transmittance (T) derived from intensity as a ratio between intensity resulting from measuring an object and a reference intensity;

an absorbance, A, being defined as the negative logarithm to a transmittance, T, ($A = -\log(T)$); and

a reflectance (R) expressing the reflectance from the surface of an object, the reflectance (R) being linearized using the Kubelka-Munk transform ($K/S = (1-R)/2R$).

56. (Previously Presented) A data processing system according to claim 55, wherein the responses are absorbances, the absorbances being determined by calculating

$$A_{\text{low}} = -\log_{10} \left[\frac{I_{\text{sample}}(\text{low}) - I_{\text{dark}}(\text{low})}{I_{\text{air}}(\text{low}) - I_{\text{dark}}(\text{low})} \right] \text{ and}$$
$$A_{\text{high}} = -\log_{10} \left[\frac{I_{\text{sample}}(\text{high}) - I_{\text{dark}}(\text{high})}{I_{\text{air}}(\text{high}) - I_{\text{dark}}(\text{high})} \right]$$

wherein I_{sample} is the intensity of the radiation detected when the object is irradiated, I_{dark} is the intensity of the radiation detected when the object is not irradiated, and I_{air} is the intensity of the radiation detected when no object is present, the intensities obtained in a measuring region of the slave instrument by:

exposing an object in the measuring region to low and high X-ray energies and detecting with detectors the intensities $I_{\text{sample}}(\text{low})$ and $I_{\text{sample}}(\text{high})$, respectively;

detecting with the detectors the intensities $I_{\text{dark}}(\text{low})$ and $I_{\text{dark}}(\text{high})$ from said detectors when no radiation reaches them; and

exposing said detectors to the low and high X-ray energies when no object is present in the measuring region and detecting $I_{\text{air}}(\text{low})$ and $I_{\text{air}}(\text{high})$, respectively.

57. (Previously Presented) A correcting system comprising a slave instrument for obtaining responses and a data processing system for correcting the responses, the responses representing measurements performed with the slave instrument and the responses based on detecting by the slave instrument at least one of attenuation, reflection and scattering of electromagnetic radiation in or from an object exposed to said electromagnetic radiation in at least two spectral ranges, the set of responses comprises one or more pairs of related responses (Q_{low}^S and Q_{high}^S), said correcting system comprising:

a first processor means for determining the one or more pairs of related responses (Q_{low}^S and Q_{high}^S) based on measurements on an object with the slave instrument;

a second processor means for performing a correction of responses using a correction according to claim 24, said second processor means comprising an accessing unit configured to access a memory storing a first set of correction coefficients ($B_0; B_1; B_2 \dots$);

a third processor means for determining the ratio $[Q_{\text{low}}/Q_{\text{high}}]^{\text{corr}}$ by the correcting function;

a fourth processor means for determining the corrected high energy response $Q_{\text{high}}^{\text{corr}}$ by the further correcting function; and

a fifth processor means for determining the corrected low energy response $Q_{\text{low}}^{\text{corr}}$ by multiplying $[Q_{\text{low}}/Q_{\text{high}}]^{\text{corr}}$ by $Q_{\text{high}}^{\text{corr}}$.

58. (Previously Presented) The system according to claim 57, wherein the electromagnetic radiation comprises x-rays.

59. (Previously Presented) The system according to claim 57, wherein each of the responses (Q) is one of:

an intensity (I);

a transmittance (T) derived from intensity as a ratio between intensity resulting from measuring an object and a reference intensity;

an absorbance, A, being defined as the negative logarithm to a transmittance, T, ($A = -\log(T)$); and

a reflectance (R) expressing the reflectance from the surface of an object, the reflectance (R) being linearized using the Kubelka-Munk transform ($K/S = (1-R)/2R$).

60. (Previously Presented) The system according to claim 52, further comprising:

a storage unit configured to store at least one of: a set of responses (Q_{low}^m and Q_{high}^m) for the set of stable objects measured on the master instrument, the first set of correction coefficients ($B_0; B_1, B_2 \dots$), and the further correcting function.

61 - 76. (Cancelled).

77. (New) A method of providing a correction for a slave instrument, the slave instrument measuring properties of an object by exposing the object to electromagnetic radiation in at least two spectral ranges and obtaining one or more object responses thereto, the responses being based on detecting at least one of attenuation, reflection and scattering of the electromagnetic radiation in or from the object by use of one or more detectors, the responses obtained in a form where they express properties either directly or via a transformation, said method of correction comprising:

(A) obtaining, for a plurality of stable objects, a set of responses, comprising one or more pairs of related responses (Q_{low}^s and Q_{high}^s), representing measurements in the at least two spectral ranges performed with the slave instrument and a set of responses, comprising one or more pairs of related responses (Q_{low}^m and Q_{high}^m), representing measurements in the at

least two spectral ranges performed with a master instrument, each stable object comprising at least a first and second different chemical compositions which are substantially stable, the first chemical compositions having X-ray response properties similar to adipose tissue, and the second chemical compositions having X-ray response properties similar to muscle tissue, wherein

(i) a pair of related responses (Q_{low}^m and Q_{high}^m) of the master instrument corresponds to each pair of related responses (Q_{low}^s and Q_{high}^s) of the slave instrument and
(ii) each element in the corresponding pair of responses (Q_{low}^m and Q_{high}^m) of the master instrument corresponds to an element in each pair of responses (Q_{low}^s and Q_{high}^s) of the slave instrument;

(B) determining, based on the sets of responses, a correcting function, the correcting function being a functional relationship between a ratio of related responses of the master instrument and a sum of a plurality of terms, each term being a product of a correcting coefficient (B_i) and powers of related responses (Q_{low}^s and Q_{high}^s) of the slave instrument, wherein each response is raised to a power being a positive or negative real number, or zero, thereby determining a first set of correcting coefficients ($B_0; B_1; B_2 \dots$); and

(C) storing the first set of correcting coefficients ($B_0; B_1; B_2 \dots$) in a memory means included in or adapted for communication with a data processing unit included in or adapted for communication with the slave instrument, wherein the first set of correcting coefficients are used to provide a correction for the slave instrument.